Figure 1
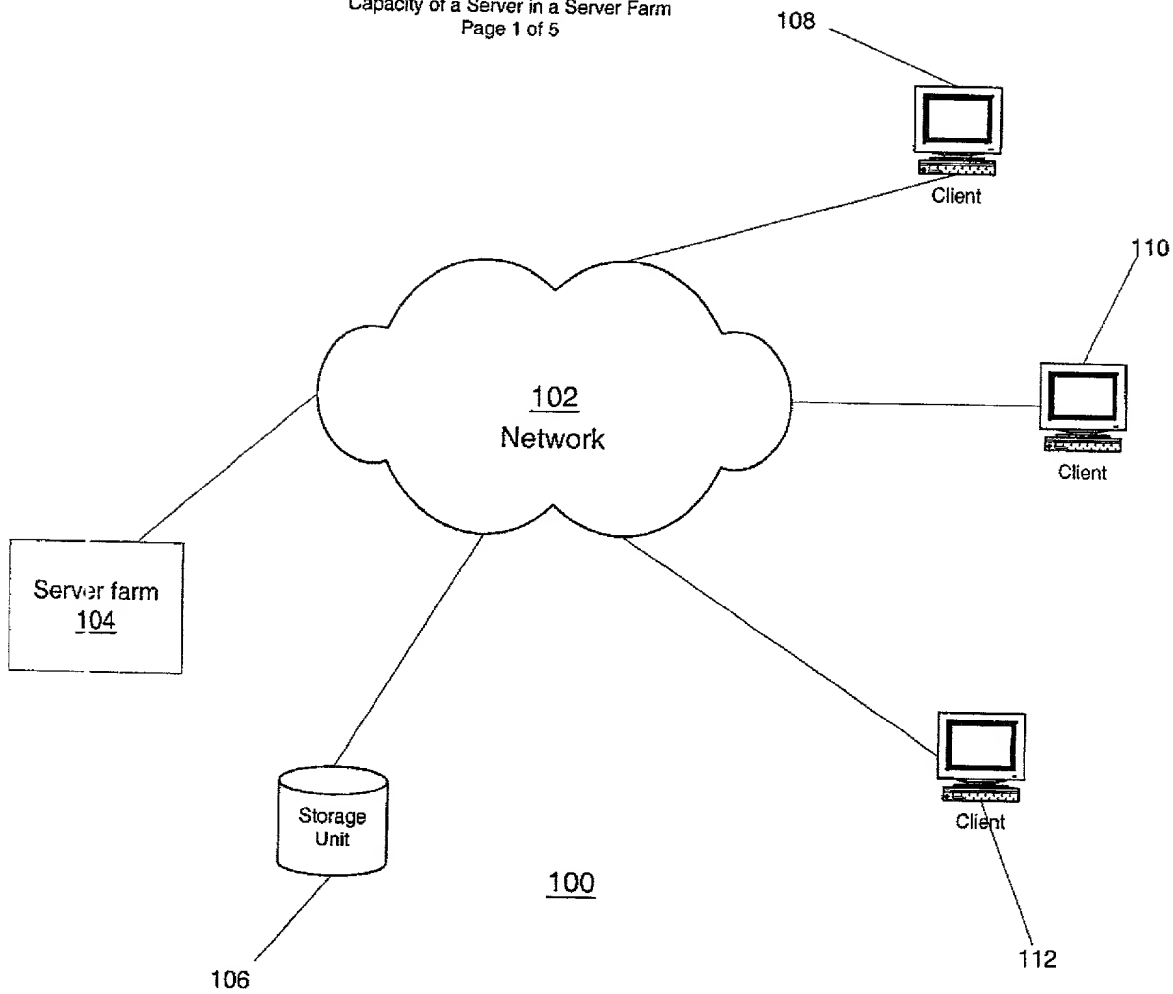
Jain et al.
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Dynamically Determine the Optimal
Capacity of a Server in a Server Farm
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108

Client

110

Client

102
Network

Server farm
104

Storage
Unit

100

106

Client

112

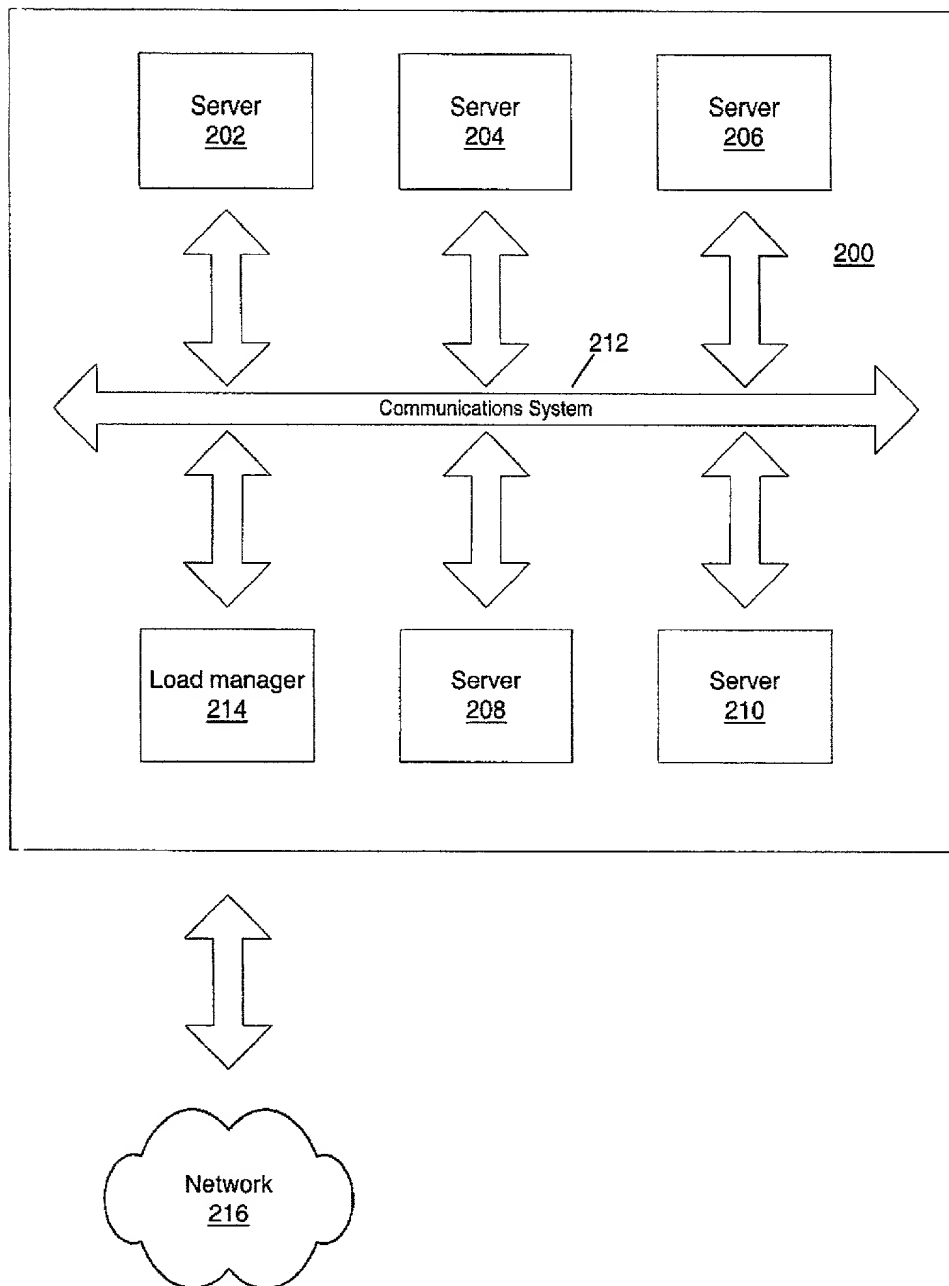# Figure 2

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Method and Apparatus to
Dynamically Determine the Optimal
Capacity of a Server in a Server Farm
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Processor
302

Processor
304

306

System Bus

308

Memory
Controller/
Cache

I/O Bus Bridge

310

316

312

PCI Bus Bridge
314

PCI Local Bus

Local Memory
309

318

320

Modem

Network
Adapter

300

Graphics
Adapter
330

PCI Bus Bridge
322

326

PCI Bus

I/O Bus

Hard Disk
332

PCI Bus Bridge
324

328

PCI Bus

Figure 3

server

Figure 4
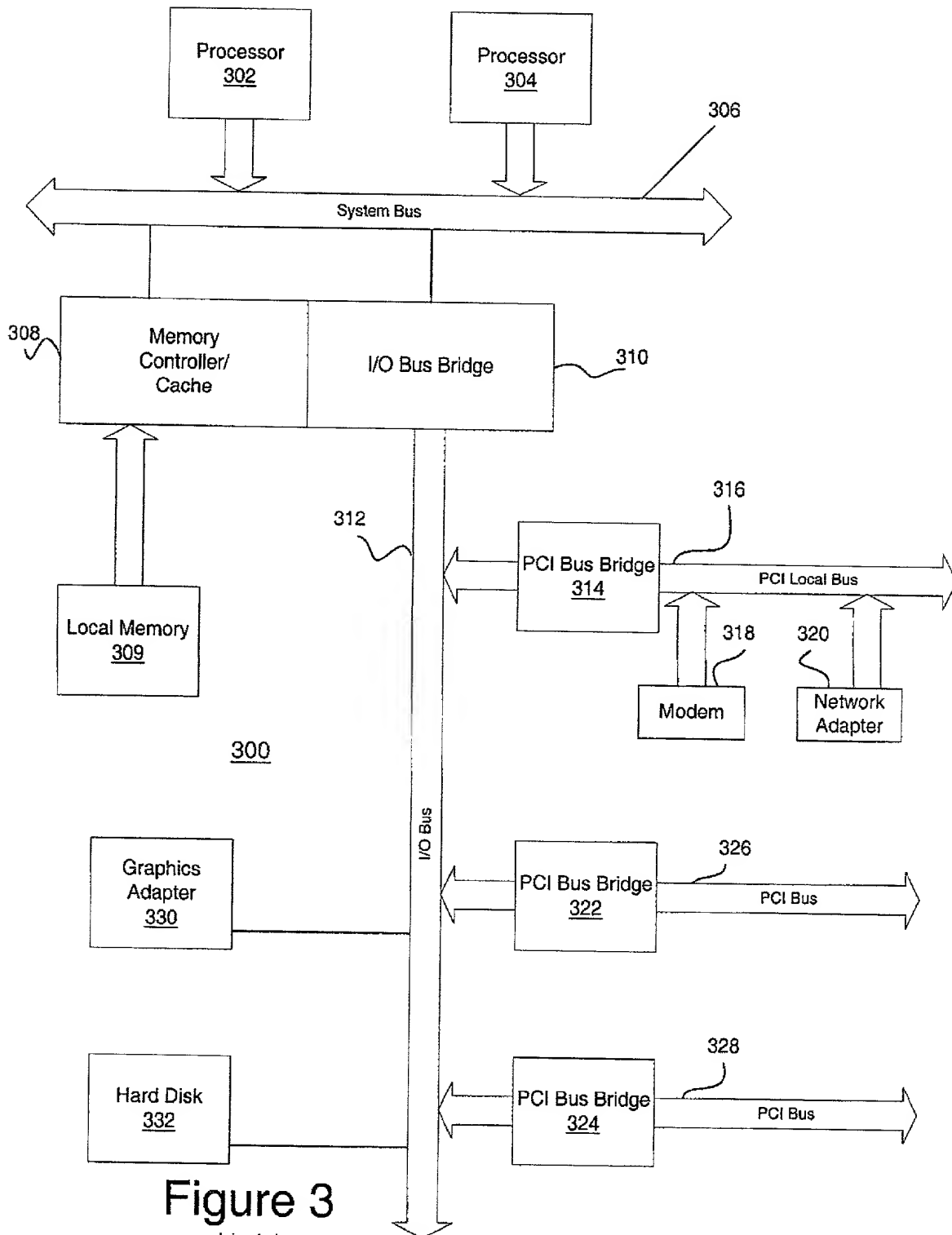
Jain et al.
AUS920000847US1
Method and Apparatus to Dynamically
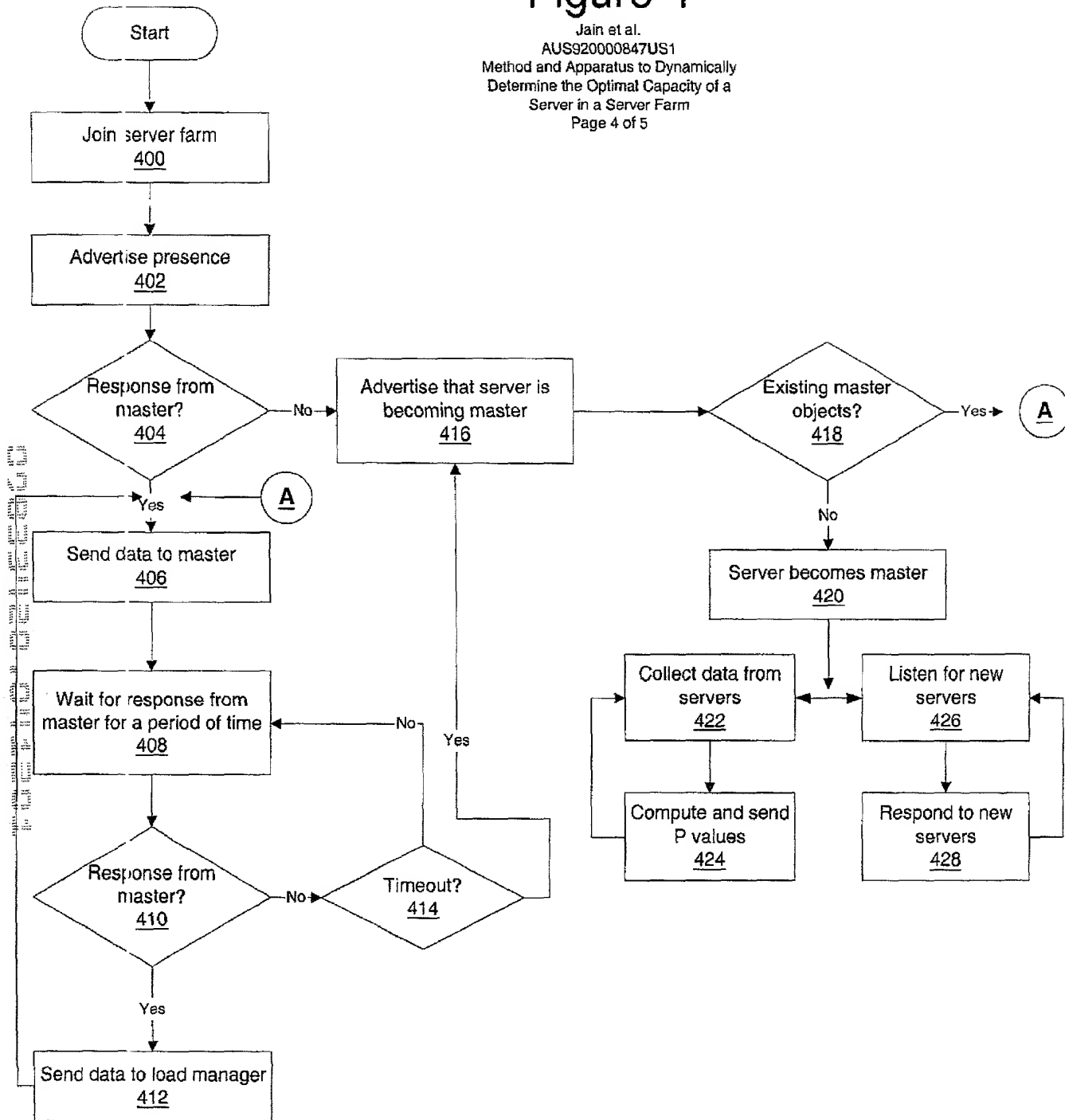Determine the Optimal Capacity of a
Server in a Server Farm
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```
        ( Start )
            │
            ▼
   ┌──────────────────┐
   │ Join server farm │
   │       400        │
   └──────────────────┘
            │
            ▼
   ┌──────────────────┐
   │ Advertise presence│
   │       402        │
   └──────────────────┘
            │
            ▼
       ◇ Response from        ┌──────────────────────┐        ◇ Existing master
         master?    ──No──▶   │ Advertise that server is │──▶    objects?      ──Yes──▶ (A)
           404                │ becoming master          │         418
            │                 │       416                │          │
           Yes ◀── (A)        └──────────────────────┘          No
            │                        ▲                           │
            ▼                        │                           ▼
   ┌──────────────────┐             │                  ┌──────────────────┐
   │ Send data to master│           │                  │ Server becomes master │
   │       406        │             │                  │       420        │
   └──────────────────┘             │                  └──────────────────┘
            │                       │                           │
            ▼                       │          ┌──────────────────┐  ┌──────────────────┐
   ┌──────────────────┐             │          │ Collect data from │  │ Listen for new   │
   │ Wait for response from│◀──No─── │          │ servers          │  │ servers          │
   │ master for a period of time│    │          │       422        │  │       426        │
   │       408        │   Yes       │          └──────────────────┘  └──────────────────┘
   └──────────────────┘             │                   │                     │
            │                       │                    ▼                     ▼
            ▼                       │          ┌──────────────────┐  ┌──────────────────┐
       ◇ Response from     ◇ Timeout?          │ Compute and send  │  │ Respond to new   │
         master?  ──No──▶    414                │ P values         │  │ servers          │
           410                                  │       424        │  │       428        │
            │                                   └──────────────────┘  └──────────────────┘
           Yes
            │
            ▼
   ┌──────────────────┐
   │ Send data to load manager │
   │       412        │
   └──────────────────┘
```

Figure 5

Start

Receive optimal capacity data from master server
500

Select server for load balancing
502

Identify current load for selected server
504

Compare current load to optimal capacity data
506

Send request to server based on comparison
508

End